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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/579,169	05/25/2000	Victor Firoiu	2204/196	7292

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EXAMINER	
PHAN, THAI Q	

ART UNIT	PAPER NUMBER
2128	

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/579,169	FIROIU ET AL.	
	Examiner	Art Unit	
	Thai Q. Phan	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-92* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-92* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to applicants' amendment filed on 12/20/2004. Claims 1-92 are pending in the action.

Drawings

Formal drawings filed on 12/20/2004 have been received and put in the record.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 38 recites the limitation "evaluating the weight" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-92 are rejected under 35 U.S.C. 102(e) as being anticipated by Siu et al, US Patent no. 6,252,851 B1.

As per claims 1, 5, 43-44, 57, and 61-62, Siu anticipates a method and computerized system with program codes for dynamically modeling a queue function including a control queue function with feature limitations very similar to the claimed invention (Summary of the Invention). According to Siu, the method and system includes means and steps:

Determining a queue function based upon predetermined system traffic conditions (col. 12, line 16-67),

And determining the control function based upon the queue function (cols. 13-16). Siu determines a control function based on the queue function or queue models such as effective queue size, estimate queue size, etc. Such queue functions such as queue specification requirement in intersect with network node control function herein are for queuing packets to meet network control function, network throughput, bandwidth requirements, congestion avoidance, etc. (col. 12, lines 45-53, lines 61-67, cols. 17, 18, and 21).

As per claims 2 and 45, Siu anticipates random early detection in queue control function.

As per claim 3, Siu anticipates a bounded discontinuity as claimed (col. 15, lines 3-65).

As per claim 4, Siu anticipates queue size estimate including minimum and maximum queue size estimate. It includes two linear segment as claimed.

As per claim 6, Siu anticipates packet drop and amount of data packet drop to meet acknowledgement agreement from the buffer (col. 3, line 52 to col. 4, line 5, cols. 19-20).

As per claims 7-13, Siu anticipates network nodes, TCP network, data acknowledgement in the network, drop rate, etc. (col. 4, lines 6-43, col. 6, lines 29-67).

As per claims 14, Siu anticipates a method and system for estimating an average queue size for a node having a buffer with a queue wherein the node resides on a link similar to the claimed invention. According to Siu, the queue size estimate includes means and steps:

Determining a round trip transmission time for the link, and

Determining the average queue size, maximum and minimum queue size at the intersection point of a node congestion control function and a queue law function, which is based in part on the round trip transmission time (col. 9, line 24 to col. 15, line 65, col. 21, lines 31-37). Siu also anticipates linear estimate queue size based on traffic flow, queue management, network version or line, and acknowledgement, and drop rate or data drop probability for random detection as claimed.

As per claims 15-17, Siu anticipates data packet flows through the queue, packet size, and data drop rate as claimed.

As per claims 18,19, 25-30, 58-59, and 78-79, Siu anticipates a method and system for estimating an average queue size for a node having a buffer with a queue wherein the node resides on a link similar to the claimed invention. According to Siu, the queue size estimate includes means and steps:

Determining a round trip transmission time for the link, and

Determining the average queue size, maximum and minimum queue size, drop rate at the intersection point of a node congestion control function and a queue law function, which is based in part on the round trip transmission time (col. 9, line 24 to col. 15, line 65, cols. 19-22).

As per claim 20-23, Siu anticipates linear estimate queue size based on traffic flow, queue management, network version or line, and acknowledgement or random detection as claimed.

As per claims 24 and 31-33, Siu anticipates drop rate to avoid traffic congestion, transmission delay, queue sizes, etc.

As per claim 35, Siu anticipates step of evaluating the maximum queue law function using the average queue size, which is related to queue law as claimed.

As per claim 36, Siu anticipates a method for estimating an average queue size for a node having a buffer with a queue wherein the node resides on a link similar to the claimed invention. According to Siu, the queue size estimate includes steps

Determining a round trip transmission time for the link, and

Determining the average queue size, maximum and minimum queue size at the intersection point of a node congestion control function and a queue law function, which is based in part on the round trip transmission time (col. 9, line 24 to col. 15, line 65). Such queue control includes determining buffer size as claimed.

As per claims 37, 40, and 85, Siu anticipates a method for estimating an average queue size for a node having a buffer with a queue wherein the node resides on a link

similar to the claimed invention. According to Siu, the queue size estimate includes steps

Determining a sampling period for queue size estimate,

Determining a round trip transmission time for the link, and

Determining the average queue size, maximum and minimum queue size at the intersection point of a node congestion control function and a queue law function, which is based in part on the round trip transmission time (cols. 7-10, col. 9, line 24 to col. 15, line 65).

As per claims 39, 85, and 87-88, Siu anticipates a method for estimating an average queue size for a node having a buffer with a queue wherein the node resides on a link similar to the claimed invention. According to Siu, the queue size estimate includes steps

Determining a maximum queue law function based upon maximum expected traffic conditions,

Determining a round trip transmission time for the link, and

Determining the average queue size for equilibrium, maximum and minimum queue size at the intersection point of a node congestion control function and a queue law function, which is based in part on the round trip transmission time (col. 9, line 24 to col. 15, line 65).

As per claim 41, Siu anticipates maximum queue law function is determined based on current traffic conditions within the network.

As per claims 42, 85, and 88-90, Siu anticipates a weighting factor such as roundtrip delay for use in calculating queue size of a buffer in a node of the network for packet transmission. The method of modeling queue size control function includes steps

Determining a sampling period for queue size estimate,

Determining a round trip transmission time for the link, and

Determining the average queue size, maximum and minimum queue size at the intersection point of a node congestion control function and a queue law function or queue model, which is based in part on the round trip transmission time, data flow rate, buffer windows (col. 9, line 24 to col. 15, line 65, col. 21, lines 29-37).

As per claims 46-53, Siu anticipates the limitations as claimed for controlling queue functions.

As per claims 54, 88, and 90, Siu anticipates a method and system for estimating an average queue size for a node having a buffer with a queue wherein the node resides on a link similar to the claimed invention. According to Siu, the queue size estimate includes means and steps:

Determining a sampling period for queue size estimate,

Determining a round trip transmission time for the link, and

Determining the average queue size, maximum and minimum queue size at the intersection point of a node congestion control function and a queue law function, which is based in part on the round trip transmission time (col. 9, line 24 to col. 15, line 65) and queue management.

As per claims 55-56, Siu anticipates queue service or management policy, queue size or threshold values as queue control parameters as claimed.

As per claim 60, Siu anticipates current traffic flow conditions.

Similarly, claims 61-92 are directed to a computer program product implemented in a computer readable medium to perform steps in the method claims above. Claims 61-92 are thus rejected under the same rationales as set forth.

Response to Arguments

4. Applicant's arguments filed 12/20/2004 have been fully considered but they are not persuasive.

In response to applicants' argument Siu does not disclose or teach determining a control function based on the queue function as cited in claims 1 and 5, the examiner disagrees with. Siu discloses determining a control function based on the queue function or queue model such as effective queue size, queue size estimate, queue size average, etc. Such queue functions herein are queuing models to store packets to meet network control function, network throughput, bandwidth requirements, network traffic conditions, etc. (col. 12, lines 45-53, lines 61-67, cols. 17, 18, and 21).

In response to applicants' argument Siu does not disclose or teach average queue size as claimed in claims 14,18, and 19, the examiner disagrees with. Siu discloses estimate average queue size for traffic throughput (col. 21, lines 29-37).

In response to applicants' argument Siu does not disclose or teach average weight in queue function as cited in claim 25, the examiner disagrees with. Siu discloses average weight to the queue size as in col. 21, lines 29-37.

In response to applicants' response Siu does not disclose or suggest a queue law function and a control function as cited in claim 27, the examiner disagrees with. Siu discloses determining a control function based on the queue function such as effective queue size, estimate queue size, etc. Such queue functions herein are for queuing packets to meet network control function, network throughput, bandwidth requirements, etc. (col. 12, lines 45-53, lines 61-67, cols. 17, 18, and 21).

In response to applicants' argument Siu does not disclose or suggest calculating a maximum queue law function based on traffic condition for the network as claimed in claim 28, the examiner disagrees with. Siu discloses queue modeds (101) of Fig. 4 with queue models wherein each queue model carries a queue law function as claimed based on the network traffic condition to avoid congestion, throughput bandwidth, etc. According to Siu, the queue law functions in the queue model include queue size, maximum queue size, etc. (col. 19, line 58 to col. 20, line 2, cols. 18-20).

In response to applicants' argument Siu does not determining a maximum queue size or average queue size as cited in claim 30, the examiner responds the cited features of average queue size and maximum queue size were disclosed in col. 12, lines 45-53, col. 19, line 58 to col. 20, line 2.

In response to applicants' argument Siu does not deal with drop probability to determine maximum queue size, and buffer size as cited in claim 36, the examiner responds Siu discloses such lost or drop probability to react to congestion (col. 3, line 30 to col. 5, line 5, for example). Siu also discloses maximum queue size, actual queue size, effective queue size, etc as claimed.

In response to applicants' argument Siu fails to disclose sample value, sampling value, weight function and total time value in the network flow management system as claimed in claim 37, the examiner disagrees with. Siu discloses sampling data, sampling period, sampling time, and weight function being used for network congestion avoidance (col. 7, line 8 to col. 10, line 24).

In response to applicants' argument Siu does not disclose average queue size and the drop probability as cited in claim 40, the examiner disagrees with. Siu discloses average queue size and lost or drop probability as claimed (cols. 7, 8, 12, 19, and 20).

In response to applicants' argument Siu does not disclose calculating the weight based upon the sampling interval and the total time interval as cited in claim 42, the examiner responds weight function is well within Siu context. Siu discloses average weight to the queue size as in col. 21, lines 29-37. Siu also discloses sampling function and time in determining or estimating average queue size as claimed (see rejection above).

In response to applicants' argument Siu does not disclose or teach determining a control function based on the queue function as cited in claims 43, 44 and 54, the examiner disagrees with. Siu discloses determining a control function based on the queue function or queue model such as effective queue size, estimate queue size, average queue, etc. Such queue functions herein are for modeling queue to store packets to meet network control function, network throughput, bandwidth requirements, network traffic conditions, etc. (col. 12, lines 45-53, lines 61-67, cols. 17, 18, and 21).

In response to applicants' argument Siu does not determining a maximum queue size or average queue size as cited in claims 54 and 58, the examiner responds the cited features of average queue size and maximum queue size were disclosed in col. 12, lines 45-53, col. 19, line 58 to col. 20, line 2.

In response to applicants' argument Siu does not disclose computer code for determining the control function based upon the queue function as cited in claims 61 and 62, the examiner disagrees with. Siu discloses a computer implemented method with computer code to determine a control function based on the queue function or queue models such as effective queue size, estimate queue size, etc. Such queue model or functions herein are for queuing packets to meet network control function, network throughput, bandwidth requirements, etc. (col. 12, lines 45-53, lines 61-67, cols. 17, 18, and 21).

In response to applicants' argument Siu does not disclose computer code for calculating average queue size and the drop probability as cited in claims 74 and 78, the examiner disagrees with. Siu discloses computerized method with program code for calculating average queue size and lost or drop probability as claimed (cols. 7, 8, 12, 19, and 20).

In response to applicants' argument Siu does not disclose or suggest computer code for calculating a maximum queue law function based on traffic condition for the network as claimed in claims 79 and 87, the examiner disagrees with. Siu discloses computer controlled method with program code for queue modeds (101) of Fig. 4 with queue models wherein each queue model carries a queue law function as claimed

based on the network traffic condition to avoid congestion, throughput bandwidth, etc. According to Siu, the queue law functions in the queue model include queue size, maximum queue size, etc. (col. 19, line 58 to col. 20, line 2, cols. 18-20). The queue model with queue control function is to meet network node performance or intersect with network node throughput requirement for service performance.

In response to applicants' argument Siu does not disclose calculating the weight based upon the sampling interval and the total time interval as cited in claim 85, the examiner responds Siu discloses an average weight to the queue size as in col. 21, lines 29-37. Siu also discloses sampling function and time in determining or estimating average queue size as claimed (see rejection above).

In response to applicants' argument Siu does not disclose or suggest computer code for calculating a maximum queue law function based on traffic condition for the network as claimed in claim 88, the examiner disagrees with. Siu discloses computerized method with program code for controlling queue modeds (101) of Fig. 4, wherein each queue model carries a queue law function as claimed based on the network traffic condition to avoid congestion, throughput bandwidth, etc. According to Siu, the queue law functions in the queue model include queue size, maximum queue size, etc. (col. 19, line 58 to col. 20, line 2, cols. 18-20).

In response to applicants' argument Siu fails to disclose sample value, sampling value, weight function and total time value in the network flow management system as claimed in claim 90, the examiner disagrees with. Siu discloses computer code for controlling sampling data, sampling period, sampling time, and weight function being

used for network congestion avoidance (col. 7, line 8 to col. 10, line 24). The computer code also includes feature of selecting queue control functions such as queue size, average queue size, etc. according to queue control and management policy to meet network throughput, service performance, etc. (cols. 17-22).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US patent no. 4,616,359, issued to Fontenot, Michael, on Oct. 1986
2. US patent no. 5,381,407, issued to Chao, Hung-Hsiang, on Jan. 1995
3. US patent no. 6,333,917 B1, issued to Lyon et al, on Dec. 2001
4. US patent no. 6,839,768 B2, issued to Ma et al, on Jan. 2005

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Thai Phan whose telephone number is 571-272-3783. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached on 571-272-3780. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 15, 2005

Thai Phan
Patent Examiner
Art unit: 2128